

## Syllabus

### **CS100: Introduction to Computer Science**

Credit Hours: 4

Prerequisites: PRE051, if applicable

#### **Course Description**

Students taking this course will gain a broad knowledge of the current practice of Computer Science including coverage of multicore and parallel systems, cloud computing wireless communications, embedded computing, agile software development, emerging programming languages (Go and F#), and new models of e-commerce.

#### **Instructor Contact Information**

Instructor Name	Gerard Arthus
Instructor Email	Garthus801@gmail.com
Instructor Phone	Home 574-217-8726 Cell 631-335-5250

#### **Course Length**

The college evaluates each course in terms of quarter hours of credit. One unit of credit is usually equivalent to a minimum of ten academic instruction hours of lecture and examination, twenty hours of skill development, or thirty hours of externship, or a combination of the three. An academic instructional hour is fifty minutes.

This class will meet for the equivalent of a minimum of 55 instructional hours or as otherwise scheduled by the college and at least in conformance with this minimum and the Syllabus. As specified by the Method of Instruction section of this Outline, the instructor will ensure that the total class sessions presented consist of a minimum of 33 direct faculty instruction hours and a maximum of 22 appropriate classroom activity hours.

All course offerings require outside preparation time, which is approximately two hours per lecture instructional hour and/or one hour per skill development instructional hour, depending on the background, interest, abilities, and motivation of the individual student.

#### **Course Objectives**

By the end of this course, you should be able to:

1. Define an algorithm and describe the importance of algorithmic problem solving to the science of computing.
2. Explain how pseudocode is used to represent algorithms.
3. Differentiate between sequential operations, conditional and iterative operations.
4. Discuss the attributes of algorithms and the relationship between these attributes and efficiency.
5. Understand the binary numbering system and binary representation of numeric and textual information.
6. Understand Boolean logic.
7. Understand gates and how they are used in implementing Boolean logic and in building computer circuits.
8. Describe the components of a computer system and the role of each component.
9. Define a Virtual Machine and its relationship with the physical host and other computers.
10. Understands basic computer networking concepts and local and wide area networks. Describe the overall structure of the Internet.
11. Understand common communication protocols and the OSI Reference Model.
12. Discuss the various aspects of Information Security and the structure of simple encryption algorithms.
13. Describe the progression of language development and describe the attributes of high-level language.

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14. Understand the variety and roles of various programming languages in contemporary software development.
15. Understand the role of compilers and language translation.
16. Understand the various models of computation.
17. Understand the core concepts and application of computational simulation and modeling.
18. Understand the elements of electronic commerce and the role of databases in electronic commerce.
19. Understand the theory underlying development of intelligent systems and the roles and application of intelligent systems.
20. Discuss the most current and significant ethical and social issues in modern computing.

### **Gradebook**

A student's performance in this course will be evaluated using a variety of factors listed below. Instructors must use a minimum of three (**homework, tests, and a final exam are required**), and it is recommended that instructors use all five areas in your evaluation.

The exact weight to be given to any particular area is determined by the instructor and will normally fall within the ranges listed below.

Area	Percentage for this Course	Suggested Range
Final Exam	25%	20 – 25%
Tests	30%	20 – 40%
Homework	15%	10 – 15%
Project/Research Paper	20%	20 – 25%
Class Participation	10%	10 – 15%
<b>TOTAL</b>	<b>100%</b>	

Letter Grade	Points	Explanation
A	94-100	Excellent
B	84-93	Above Average
C	74-83	Average
D	64-73	Below Average
F	63 & Below	Failure

### **Textbook & Instructional Material**

Invitation to Computer Science, 6th<sup>th</sup> Edition, Schneider/Gersting, Cengage Publishing, 2013, with Lab Manual and Cengage CourseMate™

Teaching tools are available from the vendor on a CD ROM that includes a test bank and instructor's manual. These are also available online.

The instructor might utilize additional instructional materials as provided by the publisher.

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**Course Outline**

**Term: 143**

<b>Class Date:</b> <u>Week 1 – 19 February 2014</u> <b>Chapter 1:</b> <i>An Introduction to Computer Science</i>	<b>Homework Due Date:</b> <u>By the end of the next week.</u>
<b>In Class Activities</b> <u>Hands-On-Projects:</u>  <u>Complete the assigned Challenge-Work Projects in the assigned Chapter(s) for this week.</u>  Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.  Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.	<b>Homework</b> <u>Review Questions:</u>  <u>Do the selected review questions in the assigned chapter(s) for this week</u>  <u>Complete the Discussion Forum and On-Line Quiz for this week</u>
<b>Class Date:</b> <u>Week 1 – 19 February 2014</u> <b>Chapter 2:</b> <i>Algorithm Discovery and Design</i>	<b>Homework Due Date:</b> <u>By the end of the next week.</u>
<b>In Class Activities</b> <u>Hands-On-Projects:</u>  <u>Complete the assigned Challenge-Work Projects in the assigned Chapter(s) for this week.</u>  Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.  Document and record all work with clear, concise, and understandable wording. Complete these assignments in	<b>Homework</b> <u>Review Questions:</u>  <u>Do the selected review questions in the assigned chapter(s) for this week</u>  <u>Complete the Discussion Forum and On-Line Quiz for this week</u>

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<p>a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.</p>	
<p><b>Class Date:</b> <u>Week 2 – 01 March 2014</u> <b>Chapter 3:</b> <i>The Efficiency of Algorithms</i></p>	<p><b>Homework Due Date:</b> <u>By the end of the next week.</u></p>
<p><b>In Class Activities</b></p>	<p><b>Homework</b></p>
<p><u>Hands-On-Projects:</u></p> <p><u>Complete the assigned Challenge-Work Projects in the assigned Chapter(s) for this week.</u></p> <p>Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.</p> <p>Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.</p>	<p><u>Review Questions:</u></p> <p><u>Do the selected review questions in the assigned chapter(s) for this week</u></p> <p><u>Complete the Discussion Forum and On-Line Quiz for this week</u></p>
<p><b>Class Date:</b> <u>Week 2 – 01 March 2014</u> <b>Chapter 4:</b> <i>The Building Blocks: Binary Numbers, Boolean Logic and Gates</i></p>	<p><b>Homework Due Date:</b> <u>By the end of the next week.</u></p>
<p><b>In Class Activities</b></p>	<p><b>Homework</b></p>

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<p><u>Hands-On-Projects:</u></p> <p><u>Complete the assigned Challenge-Work Projects in the assignemd Chapter(s) for this week.</u></p> <p>Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.</p> <p>Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.</p>	<p><u>Review Questions:</u></p> <p><u>Do the selected review questions in the assigned chapter(s) for this week</u></p> <p><u>Complete the Discussion Forum and On-Line Quiz for this week</u></p>
<p><b>Class Date: <u>Week 3 – 08 March 2014</u></b> <b>Chapter 5: <i>Computer Systems Organization</i></b></p>	<p><b>Homework Due Date: <u>By the end of the next week.</u></b></p>
<p><b>In Class Activities</b></p>	<p><b>Homework</b></p>
<p><u>Hands-On-Projects:</u></p> <p><u>Complete the assigned Challenge-Work Projects in the assignemd Chapter(s) for this week.</u></p> <p>Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.</p> <p>Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.</p>	<p><u>Review Questions:</u></p> <p><u>Do the selected review questions in the assigned chapter(s) for this week</u></p> <p><u>Complete the Discussion Forum and On-Line Quiz for this week</u></p>

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<b>Class Date:</b> <u>Week 3 – 08 March 2014</u> <b>Chapter 6: <i>An Introduction to System Software and Virtual Machines</i></b>	<b>Homework Due Date:</b> <u>By the end of the next week.</u>
<b>In Class Activities</b>	<b>Homework</b>
<p><u>Hands-On-Projects:</u></p> <p><u>Complete the assigned Challenge-Work Projects in the assigned Chapter(s) for this week.</u></p> <p>Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.</p> <p>Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.</p> <p>—</p>	<p><u>Review Questions:</u></p> <p><u>Do the selected review questions in the assigned chapter(s) for this week</u></p> <p><u>Complete the Discussion Forum and On-Line Quiz for this week</u></p>
<b>Class Date:</b> <u>Week 4 – 15 March 2014</u> <b>Chapter 7: <i>Computer Networks, The Internet and the World Wide Web</i></b>	<b>Homework Due Date:</b> <u>By the end of the next week.</u>
<b>In Class Activities</b>	<b>Homework</b>
<p><u>Hands-On-Projects:</u></p> <p><u>Complete the assigned Challenge-Work Projects in the assigned Chapter(s) for this week.</u></p> <p>Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed</p>	<p><u>Review Questions:</u></p> <p><u>Do the selected review questions in the assigned chapter(s) for this week</u></p> <p><u>Complete the Discussion Forum and On-Line Quiz for this week</u></p>

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<p>on-line at this site; and all other assignments will be uploaded there.</p> <p>Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.</p>	
<p><b>Class Date: Week 4 – 15 March 2014</b> <b>Chapter 8: <i>Information Security</i></b></p>	<p><b>Homework Due Date: <u>By the end of the next week.</u></b></p>
<p><b>In Class Activities</b></p>	<p><b>Homework</b></p>
<p><u>Hands-On-Projects:</u></p> <p><u>Complete the assigned Challenge-Work Projects in the assigned Chapter(s) for this week.</u></p> <p>Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.</p> <p>Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.</p>	<p><u>Review Questions:</u></p> <p><u>Do the selected review questions in the assigned chapter(s) for this week</u></p> <p><u>Complete the Discussion Forum and On-Line Quiz for this week</u></p>

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<b>Class Date:</b> <u>Week 5 – 22 March 2014</u> <b>Chapter 9: <i>Introduction to High-Level Language Programming</i></b>	<b>Homework Due Date:</b> <u>By the end of the next week.</u>
<b>In Class Activities</b> <u>Hands-On-Projects:</u>  <u>Complete the assigned Challenge-Work Projects in the assigned Chapter(s) for this week.</u>  Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.  Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.	<b>Homework</b> <u>Review Questions:</u>  <u>Do the selected review questions in the assigned chapter(s) for this week</u>  <u>Complete the Discussion Forum and On-Line Quiz for this week</u>
<b>Class Date:</b> <u>Week 5 – 22 March 2014</u> <b>Chapter 10: <i>The Tower of Babel</i></b>	<b>Homework Due Date:</b>
<b>In Class Activities</b> <u>Hands-On-Projects:</u>  <u>Complete the assigned Challenge-Work Projects in the assigned Chapter(s) for this week.</u>  Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.  Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.	<b>Homework</b> <u>Review Questions:</u>  <u>Do the selected review questions in the assigned chapter(s) for this week</u>  <u>Complete the Discussion Forum and On-Line Quiz for this week</u>



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<b>Class Date:</b> <u>Week 6 – 29 March 2014</u> <b>Chapter 11: <i>Compilers and Language Translation</i></b>	<b>Homework Due Date:</b> <u>By the end of the next week.</u>
<b>In Class Activities</b>	<b>Homework</b>
<p><u>Hands-On-Projects:</u></p> <p><u>Complete the assigned Challenge-Work Projects in the assigned Chapter(s) for this week.</u></p> <p>Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.</p> <p>Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.</p>	<p><u>Review Questions:</u></p> <p><u>Do the selected review questions in the assigned chapter(s) for this week</u></p> <p><u>Complete the Discussion Forum and On-Line Quiz for this week</u></p>
<b>Class Date:</b> <u>Week 6 – 29 March 2014</u> <b>Chapter 12: <i>Models of Computation</i></b>	<b>Homework Due Date:</b> <u>By the end of the next week.</u>
<b>In Class Activities</b>	<b>Homework</b>
<p><u>Hands-On-Projects:</u></p> <p><u>Complete the assigned Challenge-Work Projects in the assigned Chapter(s) for this week.</u></p> <p>Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course.</p>	<p><u>Review Questions:</u></p> <p><u>Do the selected review questions in the assigned chapter(s) for this week</u></p> <p><u>Complete the Discussion Forum and On-Line Quiz for</u></p>

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<p>Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.</p> <p>Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.</p>	<p><u>this week</u></p>
<p><b>Class Date:</b> <u>Week 7 – 05 April 2014</u> <b>Chapter 13:</b> <i>Simulation and Modeling</i></p>	<p><b>Homework Due Date:</b> <u>By the end of the next week.</u></p>
<p><b>In Class Activities</b></p>	<p><b>Homework</b></p>
<p><u>Hands-On-Projects:</u></p> <p><u>Complete the assigned Challenge-Work Projects in the assigned Chapter(s) for this week.</u></p> <p>Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course.</p> <p>Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.</p> <p>Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.</p>	<p><u>Review Questions:</u></p> <p><u>Do the selected review questions in the assigned chapter(s) for this week</u></p> <p><u>Complete the Discussion Forum and On-Line Quiz for this week</u></p>

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<p><b>Class Date:</b> <u>Week 7 – 05 April 2014</u>  <b>Chapter 14:</b> <i>Electronic Commerce and Databases</i></p>	<p><b>Homework Due Date:</b> <u>By the end of the next week.</u></p>
<p><b>In Class Activities</b></p> <p><u>Hands-On-Projects:</u></p> <p><u>Complete the assigned Challenge-Work Projects in the assignemd Chapter(s) for this week.</u></p> <p>Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.</p> <p>Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.</p>	<p><b>Homework</b></p> <p><u>Review Questions:</u></p> <p><u>Do the selected review questions in the assigned chapter(s) for this week</u></p> <p><u>Complete the Discussion Forum and On-Line Quiz for this week</u></p>
<p><b>Class Date:</b> <u>Week 8 – 12 April 2014</u>  <b>Chapter 15:</b> <i>Artificial Intelligence</i></p>	<p><b>Homework Due Date:</b> <u>By the end of the next week.</u></p>
<p><b>In Class Activities</b></p> <p><u>Hands-On-Projects:</u></p> <p><u>Complete the assigned Challenge-Work Projects in the assignemd Chapter(s) for this week.</u></p> <p>Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.</p> <p>Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.</p>	<p><b>Homework</b></p> <p><u>Review Questions:</u></p> <p><u>Do the selected review questions in the assigned chapter(s) for this week</u></p> <p><u>Complete the Discussion Forum and On-Line Quiz for this week</u></p>

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<b>Class Date:</b> <u>Week 8 – 12 April 2014</u> <b>Chapter 16:</b> <i>Computer Graphics and Entertainment: Movies, Games and Virtual Communities</i>	<b>Homework Due Date:</b> <u>By the end of the next week.</u>
<b>In Class Activities</b>	<b>Homework</b>
<u>Hands-On-Projects:</u>  <u>Complete the assigned Challenge-Work Projects in the assigned Chapter(s) for this week.</u>  Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.  Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.	<u>Review Questions:</u>  <u>Do the selected review questions in the assigned chapter(s) for this week</u>  <u>Complete the Discussion Forum and On-Line Quiz for this week</u>
<b>Class Date:</b> <u>Week 9 – 19 April 2014</u> <b>Chapter 17:</b> <i>Making Decisions about Computers, Information, and Society</i>	<b>Homework Due Date:</b> <u>By the end of the next week.</u>
<b>In Class Activities</b>	<b>Homework</b>
<u>Hands-On-Projects:</u>  <u>Complete the assigned Challenge-Work Projects in the</u>	<u>Review Questions:</u>  <u>Do the selected review questions in the assigned chapter(s) for this week</u>

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<p><u>assignemd Chapter(s) for this week.</u></p> <p>Go to <a href="http://www.openeducation.org/moodle">http://www.openeducation.org/moodle</a> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.</p> <p>Document and record all work with clear, concise, and understandable wording. Complete these assignments in a tutorial type format as if you were explaining the materials to someone who was unfamiliar with the information.</p>	<p><u>Complete the Discussion Forum and On-Line Quiz for this week</u></p>
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**This course has an in-class final exam. Final exam date: 19 April 2014**

### **Additional Final Exam Information:**

#### **Method of Instruction**

Instructional techniques must be appropriate, and at a collegiate level, to the specific goals and objectives cited above. Students and instructors must have a clear understanding of the goals and time requirements of this course, the nature of the course context, and method of evaluation.

This course has two distinct but related instructional phases. The first component constitutes a minimum of 33 direct faculty instruction hours. This component is the lecture series and provides instruction in theory, principles or practices of the course. The second component constitutes a maximum of 22 appropriate classroom activity hours. This component is the skill development phase of the course and provides students the opportunity to apply knowledge gained in the lecture series. Method of instruction must fulfill the intended learner outcomes and competencies stated in the course goals and objectives and are appropriate to the capabilities of the students. For career oriented courses, the instructor must demonstrate that an effective relationship exists between curricular content and current practices in the field.

#### **Additional Class Notes**

Go to <http://www.openeducation.org/moodle> to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site; and all other assignments will be uploaded there.